

REMARKS

Claims 1-4, 6, 9, 11-27, 29, 30 and 32 remain pending herein. Independent claims 1 and 30 have been amended herein.

1. Claims 1-4, 6, 11-15, 29-30 and 32 were rejected under §103 over Hengst in view of Lu et al., Breidenbach et al., and Hotate et al. This rejection is respectfully traversed for the following reasons.

The PTO has continued to rely upon Hengst for the disclosure of a wafer boat for supporting silicon wafers. The PTO acknowledges that Hengst fails to disclose a wafer boat combining the features of post coating surface finish less than or substantially equal to 1.0 micron and a ceramic coating having a thickness greater than or equal to 30 microns. Accordingly, the PTO continues to look to Lu et al., and has now further relied upon Breidenbach et al. and Hotate et al.

Applicant submits that the PTO's continued reliance upon Lu et al. in an attempt to meet the deficiencies of Hengst is misplaced, and that the additional secondary references Breidenbach et al. and Hotate et al. fail to further support the combination of references argued by the PTO. In this respect, the remarks made in the prior response are incorporated herein. The PTO relies upon Lu et al., Hotate et al. and Breidenbach et al. for alleged teaching that it would have been obvious for one of ordinary skill in the art to form the silicon carbide coating of Hengst to have a thickness less than 100 microns based upon two reasons, namely because too thick a layer (i) may tend to peel, and (ii) may acquire defects. In addition, the PTO argues that too thin a layer (presumably less than 30 microns) may not provide adequate protection. Applicant submits that the reasoning adopted by the PTO to support the combination of references is not supported by the references of record, and that the references of record fail to provide any other sound technical basis to combine features of a surface finish Ra less than or substantially equal to 1.0 micron and ceramic coating thickness greater than or equal to 30 microns.

More specifically, Lu et al. merely teach that silicon carbide coatings having a thickness of 100 microns or less are known. While Applicant certainly does not dispute that silicon carbide coatings of a wide variety of thicknesses are well known in various art areas, Lu et al. fail to teach or provide any motivation of forming the disclosed silicon carbide layer Hengst to have a thickness greater than or equal to 30 microns. In this respect, the PTO has looked to Hotate et al. for disclosure of CVD SiC coatings having a thickness within a range of 30 to 300 microns. However, the disclosure of Hotate et al. is specifically limited to an optical device, and teaches that too high a thickness, such as more than 300 microns, causes problems with irregular grain growth and degradation of optical properties (column 1, lines 20-25). This particular disclosure is limited to the context of an optical mirror and is of limited significance within the field of Hengst, a wafer boat for processing semiconductor wafers. One of ordinary skill in the art would certainly not have looked to disclosure of an optical mirror for guidance of silicon carbide thickness features in the context of a completely different art area, wafer boats for silicon wafer processing. Accordingly, the teaching of a thickness range of 30 to 300 microns is of limited significance.

The disclosure of Breidenbach et al. is even less relevant, simply generally teaching that thick CVD coatings deposited on a dissimilar substrate (namely quartz), may reach a certain thickness and then flake away from the underlying quartz surface. This peeling is well documented in high temperature applications where a coating is provided on a dissimilar substrate, most notably a substrate having a different thermal expansion coefficient. However, Applicant points out that the primary reference Hengst teaches a silicon carbide-based wafer boat coated with a like material, CVD SiC. Accordingly, teaching of too thick of a ceramic layer having a tendency to peel from an underlying dissimilar substrate is of limited of significance and fails to bridge the gap of the art of record; the art fails to teach or suggest the combination of surface finish and coating thickness features according to the claimed invention.

For at least the foregoing reasons, Applicant submits that the presently claimed invention would not have been obvious over Hengst in view of the several secondary references. Accordingly, reconsideration and withdrawal of this §103 rejection are respectfully requested.

2. Claims 1-4, 6, 9, 11-15, 29-30 and 32 were rejected over Inaba et al. in view of Lu et al. This rejection is respectfully traversed for the following reasons.

Applicant submits that the combination of Inaba et al. and Lu et al. is deficient for the reasons noted above, and that Inaba et al. is generally no more relevant than the disclosure of Hengst. Even further, Applicant points out that the present claims specify a post coating surface finish Ra less than or substantially equal to 1 micron. However, Inaba et al. teach a wafer boat having a particular Rmax, not Ra. In this respect, a detailed review of the working examples of Inaba et al. reveal that the Rmax values are at least 3.2 microns (see Table 3). While surface roughness parameters Rmax and Ra are related, one cannot conclude from the teachings of Inaba et al. that the disclosed wafer boat has a surface roughness Ra equal to or less than 1.0 microns.

For at least the foregoing reasons in view of the clarifying amendments to the present claims to specify Ra, Applicant submits that the presently claimed invention would not have been obvious over Inaba et al. in view of Lu et al. Accordingly, reconsideration and withdrawal of this §103 rejection are respectfully requested.

3. Claim 16 was rejected over the references discussed above in further view of Wingo. This rejection is deficient for the reasons advanced above as Wingo fails to overcome the deficiencies of the rejections addressed above.

4. Applicant submits that claim 30 recites even further patentable subject matter, reciting a preferable range of coating thicknesses, that is, within a range of 30 to 60 microns. Clearly such a thickness range is not disclosed or suggested by the references of record.

Applicant respectfully submits that the present application is now in condition for allowance. Accordingly, the Examiner is requested to issue a Notice of Allowance for all pending claims.


Should the Examiner deem that any further action by the Applicant would be desirable for placing this application in even better condition for issue, the Examiner is requested to telephone Applicant's undersigned representative at the number listed below.

The Commissioner is hereby authorized to charge any fees, which may be required, or credit any overpayment, to Deposit Account Number 50-2469.

Respectfully submitted,

Date

7/25/05


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